

Claims

What is claimed is:

- 1 1. A heat dissipating device, comprising:
2 a main body having a surface that is plated or coated with at least two
3 different metals to form a design effective for bonding to solder and for
4 adhering to polymer in a thermal interface material.
- 1 2. The heat dissipating device of claim 1, wherein the two metals are one or
2 more of the combinations of Ni/Au, Ni/Ag, Cu/Au, Cu/Ag, and Cu/Ni.
- 1 3. The heat dissipating device of claim 1 wherein the design is a checkered
2 square grid.
- 1 4. The heat dissipating device of claim 1 wherein the design is a grid
2 comprising circles.
- 1 5. The heat dissipating device of claim 1 wherein the design is a bull's Eye.
- 1 6. The heat dissipating device of claim 1 wherein the design comprises corner
2 squares.
- 1 7. The heat dissipating device of claim 1 wherein the design comprises a
2 central square.
- 1 8. An integrated circuit package comprising the heat dissipating device of
2 claim 1.
- 1 9. An electronic system comprising the integrated circuit package of claim 8.
- 1 10. An electronic assembly comprising the integrated circuit package of claim 8.

- 1 11. A method for preventing delamination of thermal interface materials
2 contacting a heat dissipating device, comprising:
3 Plating a surface of the heat dissipating device with at least two different
4 metals to form a design effective for bonding to solder and for adhering to
5 polymer, wherein the surface contacts the thermal interface material.
- 1 12. The method of claim 11, further comprising adding channels or serrations to
2 the surface of the heat dissipating device.
- 1 13. The method of claim 11, further comprising adhering and bonding the
2 thermal interface material to the surface.
- 1 14. A heat dissipating device, comprising:
2 a main body comprising a surface and channels or grooves or one or
3 more of serrations, channels and grooves, defined by the surface.
- 1 15. The heat dissipating device of claim 14 wherein the main body defines a
2 cavity and the channels or grooves or serrations or one or more of channels,
3 grooves, and serrations are a portion of the surface defining the cavity.
- 1 16. An integrated circuit package comprising the heat dissipating device of
2 claim 14.
- 1 17. The integrated circuit package of claim 16, further comprising a thermal
2 interface material contacting the main body surface.
- 1 18. The integrated circuit package of claim 17, wherein the channels or grooves
2 or channels and grooves increase the surface area of the heat dissipating device
3 that is contacted by the thermal interface material.

- 1 19. The integrated circuit package of claim 17 wherein the thermal interface
2 material comprises one or more of a polymer and a polymer solder hybrid.
- 1 20. The heat dissipating device of claim 1, further comprising channels or
2 grooves or serrations or one or more of channels, grooves and serrations defined
3 by the surface.
- 1 21. An electronic system comprising the integrated circuit package of claim 16.
- 1 22. An electronic assembly comprising the integrated circuit package of claim
2 16.
- 1 23. A method for preventing delamination in a thermal interface material that
2 contacts a heat dissipation device surface, comprising:
3 applying a pre-attached solder to the surface of the heat dissipation
4 device surface contacting the thermal interface material.
- 1 24. The method of claim 23 wherein the solder is pre-attached by cold forming.
- 1 25. The method of claim 23 wherein the pre-attached solder is applied by solder
2 intermetallic compound (IMC) formations.
- 1 26. An electronic system, comprising:
2 an electronic assembly comprising a heat dissipating device, comprising:
3 a main body having a surface that is plated or coated with at least two
4 different metals to form a design effective for bonding to solder and for
5 adhering to polymer in a polymer solder hybrid.
- 1 27. The electronic system of claim 26 wherein the surface of the main body
2 further comprises perturbations.

1 28. A heat dissipating device, comprising:
2 a main body having a surface that is plated or coated with at least two
3 different metals to form a design effective for bonding to a thermal interface
4 material.

1 29. The heat dissipating device of claim 1, wherein the two metals are one or
2 more of the combinations of Ni/Au, Ni/Ag, Cu/Au, Cu/Ag, and Cu/Ni.